

# EXHIBIT D

No.	Topic	Testimony already agreed to by Google	Disputed?
1	The structure, function, and operation of the Accused Products, including those features and functionalities identified in Plaintiff's Infringement Contentions.	the structure, function, and operation of the accused MXU in TPU v2 and TPU v3	No
2	Google's research and development efforts relating to the Accused Products, including Google's alleged conception and design of the Accused Products.	Google's development and implementation of the Accused Products	No
3	Google's decision to develop, build, and implement in its data centers the Accused Products.	Google's decision to use the accused TPU v2 and TPU v3 in Google's data centers within the United States	No
4	Google's efforts to design around any claim of the Asserted Patents.	non-privileged information regarding this topic	No
5	The utility and advantages of the Accused Products as perceived by Google over any competing technologies.	comparisons between the accused TPU v2 and TPU v3 and alternatives for machine-learning training	No
6	Google's licensing and intellectual property policies and practices.	non-privileged information regarding this topic	No
7	Any patents or patent applications filed by Google that describe any aspect of the Accused Products; any continuations, continuations-in-part, or divisions thereof; and any reissues or extensions thereof.	non-privileged information regarding patents or patent applications filed by Google related to the accused MXU in TPU v2 and TPU v3	No

\*As revised by Singular in its Motion to Compel

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8	Sworn testimony, including but not limited to deposition and trial testimony, by Google or anyone testifying on Google's behalf in any proceeding relating to the Accused Products.	N/A (following meet and confer)	No
9	Acquisitions, licenses, patent licenses, settlement agreements, covenants not to sue, or other agreements entered into by Google relating to the Accused Products.	non-privileged information regarding Google agreements with third parties relating to the alleged infringing functionality of the Accused Products	No
10	Revenues, costs and/or expenses, and profits for any products or services (including the Accused Services) making use of the Accused Products.	costs and expenses related to the use of the accused TPU v2 and TPU v3 and the profits and losses related to Google's Cloud TPU products/services within the United States	Yes
11	Research and development costs and expenses relating to the Accused Products.	Google's research and development costs and expenses relating to the accused TPU v2 and TPU v3	No
12	Projections for sales, use or cost savings for any products or services (including the Accused Services) making use of the Accused Products.	costs and expenses related to the use of the accused TPU v2 and TPU v3 and the profits and losses related to Google's Cloud TPU products/services within the United States	Yes
13	Development profit and loss statements for any products or services (including the Accused Services) making use of the Accused Products.	costs and expenses related to the use of the accused TPU v2 and TPU v3 and the profits and losses related to Google's Cloud TPU products/services within the United States	Yes
14	Google's publicly-disclosed financial statements.	N/A (following meet and confer)	No

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No.	Topic	Testimony already agreed to by Google	Disputed?
15	The monetary and/or nonmonetary value that Google and its customers and end users of the Accused Products and Accused Services attribute to the features of the Accused Products, including the existence and substance of any related studies, surveys, presentations, reports, or other similar documentation.	N/A (following meet and confer)	No
16	Presentations, whether written, verbal, recorded, televised and/or broadcast (via the Internet or otherwise), concerning the Accused Products and Accused Services.	N/A (following meet and confer)	No
17*	Internal or market studies prepared by (or for) Google concerning the importance or benefits of the Accused Services, including any features or components thereof.	comparisons between the accused TPU v2 and TPU v3 and alternatives for machine-learning training (see also topic nos. 5, 31, 33, 42, 44, and 45, none of which are disputed)	Yes
18	Profit and loss (P&L) statements of any product group or business segment(s) responsible (or formerly responsible) for the Accused Services.	costs and expenses related to the use of the accused TPU v2 and TPU v3 and the profits and losses related to Google's Cloud TPU products/services within the United States	Yes
19	Product Requirement Documents (PRD) or similar development planning documents concerning the Accused Products.	Google's development and implementation of the Accused Products	No
20	Capital asset requests and analyses associated with developing Google's data centers without the Accused Products.	These do not exist, but a witness will testify about Google's capital expenditure plans, including <i>before</i> the deployment of the accused TPUs	Yes

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No.	Topic	Testimony already agreed to by Google	Disputed?
21	Google's long-term capital investment plans relating to its data centers.	Google's capital expenditure plans, including <i>before</i> the deployment of the accused TPUs	Yes
22	Projections of Google's long-term data center needs and shortfalls.	Google's capital expenditure plans, including <i>before</i> the deployment of the accused TPUs	Yes
23	Capital asset requests and analyses associated with developing Google's data centers with the Accused Products.	the deployment of the accused TPUs in Google's data centers, including related costs, and capital asset requests	Yes
24	Operating budgets and plans for Google data centers operating with and without the Accused Products, including without limitation size and energy requirements.	the deployment of the accused TPUs in Google's data centers, including related costs, and capital asset requests	Yes
25*	Financial analyses prepared by Google related to the actual operation of its data centers with and without the Accused Products.	the deployment of the accused TPUs in Google's data centers, including related costs, and capital asset requests	Yes
26	Google's business planning, long-term capital expenditure plans, or other studies from prior to the use of the Accused Products.	Google's capital expenditure plans, including <i>before</i> the deployment of the accused TPUs and the deployment of the accused TPUs in Google's data centers, including related costs, and capital asset requests	No

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27	Google's decision to invest in designing and making the TPU v.2 and TPU v.3 in-house, including business analyses, capital asset requests, research and development expenditure requests, research and development reports and presentations related to the development of the Accused Products, and presentations to management and/or Google's board to support the decision to implement the Accused Products.	Google's decision to use the accused TPU v2 and TPU v3s in Google's data centers within the United States	No
28	The fabrication of the Accused Products, including costs of fabrication and testing of the Accused Products.	request to meet and confer	No
29	Budgets and forecasts relating to the development and operation of Google's Cloud Platform and Cloud AI products.	costs and expenses related to the use of the accused TPU v2 and TPU v3 and the profits and losses related to Google's Cloud TPU products/services within the United States	Yes
30	Google's projected or actual revenues, costs and profits from the operation of Cloud Platform, Cloud AI, or any other Google service or business that makes use of the Accused Products.	costs and expenses related to the use of the accused TPU v2 and TPU v3 and the profits and losses related to Google's Cloud TPU products/services within the United States	Yes
31	Studies, analyses, and tests of the technical and cost benefits, including energy, maintenance, GPU purchases, and IT infrastructure technical and costs benefits due to the consolidation of Neural Networks training and inference on TPU v.2	comparisons between the accused TPU v2 and TPU v3 and alternatives for machine-learning training	No

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No.	Topic	Testimony already agreed to by Google	Disputed?
32	Quantifications, evaluations and estimates of the value to Google of the benefits of using the Accused Products, including, but not limited to, improved search results, advertising placement, increases in volume of search and advertising, increased revenues, profits, advertising rates, and/or click-through rates.	Google's decision to use the accused TPU v2 and TPU v3s in Google's data centers within the United States	Yes
33	Incremental benefits, including increased revenues or profits projected or earned by Google from sale or use of the Accused Products compared to other architectures.	comparisons between the accused TPU v2 and TPU v3 and alternatives for machine-learning training.	No
34	Google's alleged conception, design, development and testing of the "bfloat16" number format and its use of the "bfloat16" number format in the Accused Products.	Google's decision to use the bfloat16 number format for the MXU in TPU v2 and TPU v3	No
35	The identity of all employee(s) at Google who allegedly first conceived of the "bfloat16" number format and any applications thereof, including its use in the Accused Products.	N/A (following meet and confer)	No
36	As of 2017, the average cost to build and maintain a data center	data center costs and expenses related to the use of the accused TPU v2 and TPU v3	Yes
37	As of 2017, Google's corporate return on investment (ROI) policy.	request to meet and confer	Yes

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No.	Topic	Testimony already agreed to by Google	Disputed?
38	Sebastian Thrun's involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents, presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by Sebastian Thrun referring or relating to the Accused Products.	N/A (following meet and confer)	No
39	Quoc Le's involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents, presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by Quoc Le referring or relating to the Accused Products.	N/A (following meet and confer)	No
40	Andrew Phelps' involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents, presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by Andrew Phelps referring or relating to the Accused Products.	N/A (following meet and confer)	No

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41	Astro Teller's involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents, presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by Astro Teller referring or relating to the Accused Products.	N/A (following meet and confer)	No
42	Analyses of the relative benefits, performance, and cost prepared by or for Google of any non-infringing alternatives or acceptable substitutes for the Accused Products.	comparisons between the accused TPU v2 and TPU v3 and alternatives for machine-learning training	No
43	Google's cost of capital for tangible and intangible assets, project-specific discount rates, and/or weighted average cost of capital.	N/A (following meet and confer)	No
44	Comparisons of the Accused Products (and/or features and functions thereof) to any other product of Defendant and/or of any other entity (and/or features and functions thereof).	comparisons between the accused TPU v2 and TPU v3 and alternatives for machine-learning training	No
45	Studies by Google or third parties discussing the benefits of using the Accused Products as opposed to other products, computer systems, devices, and other hardware/software having architectures that differ from those used by the Accused Products.	comparisons between the accused TPU v2 and TPU v3 and alternatives for machine-learning training	No

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No.	Topic	Testimony already agreed to by Google	Disputed?
46	Google's acquisition of DeepMind Technologies, including without limitaiton [sic] purchase price allocations, the purchase rationale, board approvals, and studies and analyses of the activities of DeepMind Technologies prepared by or for Google.	N/A (following meet and confer)	No

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